

# **MANGOLD BRAILLE PROGRAM**

## **Tactile Perception and Braille Letter Recognition**

**by Sally Mangold**

### **Introduction**

The Mangold Braille Program for tactile recognition consists of two training levels. The first level intends to train the tactile perception and the recognition of symbols, surfaces and geometric shapes to a child. The second level of the Program is focusing on teaching children in the use of the Braille Alphabet. Both levels are divided in to training units, which are building on each other. One unit equals one training lesson. The training units are constructed in a way, which allows the children to repeat learning contents from earlier lessons in lessons, which are going to take place later. The training lessons always trying to combine new and old gained knowledge's so that the child will memorize all learned contents.

The Mangold training program consists of three boxes. Two boxes are including the Braille materials, which are used as the training materials. The third box contains a pushpin board, pins and a rubberped. Additionally it provides a teaching manual for teachers in order to give proper training to their students. The teaching manual contains explanations and hinds in adequate teaching, advices of evaluating the progress of the students and the different training exercises for every lesson. On the following pages you will find a brief description of every teaching lesson. The description will imply an explanation of the knowledge's and skills, which are going to be trained to the child. Additionally it will provide some descriptions of the used teaching materials.

### **Introduction chapter**

The introduction chapter is divided into three parts. The first part deals with the precision teaching. The second part gives some important hinds for good Braille reading and teaching. The third part provides the structure of the training lessons and some assumptions about the skills a child should have acquired so that it will be able to understand and practically implement the concept of Braille.

### **Precision teaching**

One criteria of the precision teaching is the evaluation of the skill development progress of the trained child. In order to make a clear evaluation it is necessary to divide the skills which children are intend to learn into sub skills. The sub skills should be connected with a certain aim, which the children have to accomplish. The book describes an evaluation method of creating tables, which are indicating the skill development of the child. These tables are divided in to the columns of skills, aims and the achieved result. The skill a child needs to accomplish should be divided into different learning goals. The achieved goals of a child are marked with colourful dots

and the skill development progress is shown on the table in an up warding line/curve. Skill development is measured in percentage. The Mangold Program contains a sample of an evaluation chart for teachers, which can be used as an orientation for teachers. The evaluation progress of the children should clearly explained and shown to them. They will get a better understanding of their abilities, gain self-confidence and will experience that their learning performance can be deviating from one to another day. In order to make children aware of their skills the Mangold Program is referring to reward children from time to time. This keeps the learning motivation high and is an attempt to achieve difficult goals.

### **Hinds for good Braille teaching- and reading**

The teaching manual provides some hinds what the children should learn in order to become good Braille readers.

Examples for hinds are:

- Showing and practicing hand movements like horizontally or vertically
- Utilization of a two handed reading technique in which the left hand locates
- The beginning of the next line, while the right hand finishes reading the previous line.
- Students should gain the ability of recognizing tactile symbols by touching/reading either vertically or horizontally.
- Students should learn to lightly touch the dots on the paper so that they are not getting damaged.
- Students should be able to read letters, which are mirror images of other letters in a right way without any confusion.

If some children are having rather weak hands the Mangold Program provides training suggestions in strengthening the hands movements and stamina.

### **Structure of the teaching lessons and assumptions about needed skills for learning Braille**

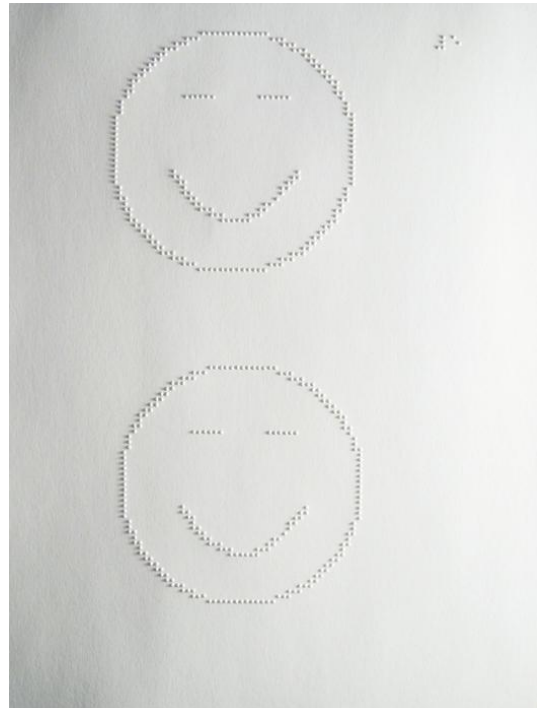
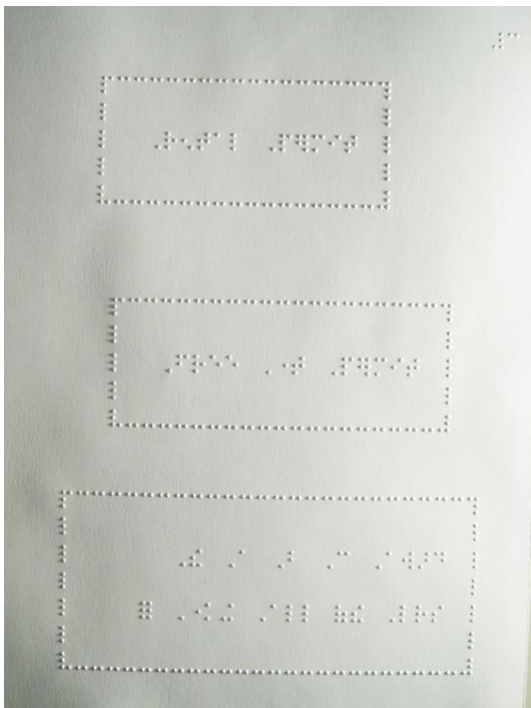
One criterion test is provided at the beginning of each lesson. The criterion test is used for daily one-minute timings. All the pages that follow the criterion test page teach the skills represented by the criterion test. (The criterion test represents the most difficult skill taught in that lesson.) The lessons are carefully sequenced in a hierarchy of skills. The daily one-minute timing of criterion tests measures firstly the ability of a student to move his hands across braille symbols at a specified rate that corresponds to each lesson and secondly his ability to interpret the braille symbols accurately. Previous users of this program have stated that they were working with four worksheets per day and completed the entire program within 13 - 14 weeks. The timeframe is just an average. For achieving good tactile recognition and reading skills it is recommended to use this program in a consecutive manner. The performance

goals, which are listed in the beginning of every lesson, can only be used for students who have already acquired the following skills

- The student can identify likes and differences among real objects in his environment.
- The student can categorize real objects:
  - according to physical properties.
  - according to operational functions.
  - As component parts of a whole.
- The student can determine the relative position of his body to objects in his immediate environment.
- The student can identify words that rhyme when given verbal stimulus.
- The student is able to turn pages in a book.

### **Awards, permits, and banges**

The first six pages of the Braille version of the Mangold program contain awards, rental permits and badges, which can be given to the students if they have made a great progress.



Examples for rental permits are:

- Free time permit: "Leave me alone for fifteen minutes."

Examples for awards for great progress are:

- "The smart fingers": Award for hard work
- The ABC Award: for knowing all of the letters

Example for a badge: tactile picture of a big smile

The rewarding titles are written on one Braille paper surrounded by a tactile square.

## Letters of the Alphabet

Pages seven and eight of the Braille version contain the letters of the Braille alphabet. Every letter is written in a single square. The letters can be cut out and used as flashcards.

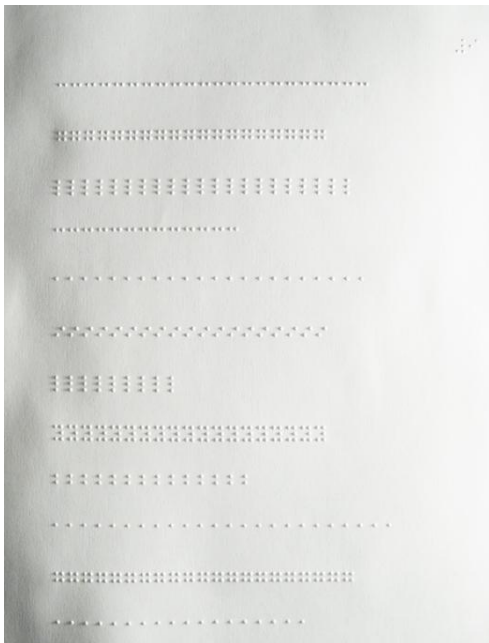
On the next pages you will find a brief description of the training lessons. The first lessons are aiming at obtaining a coordinated hands movement and a good tactile perception and recognition of different Braille symbols.

### Lesson 1

Tracking from left to right across like symbols that

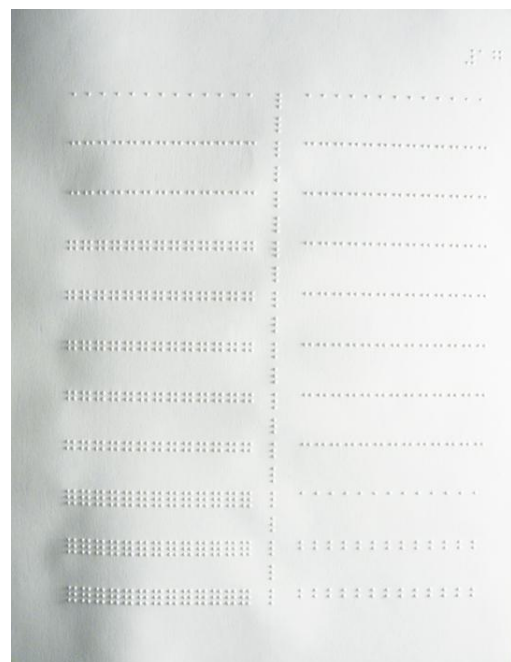
Follow closely without a space.

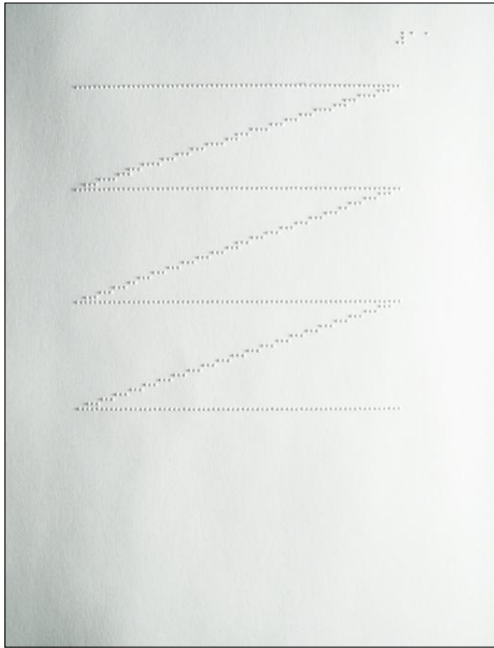
This lesson includes Braille pages 9 till 23. The aims of the lesson are:



- To emphasize if lines are long, short, fat or thin
- Practicing both-hand reading (page 9 till page 17)
- One hand reading will be practiced from page 17 till 23.

- To recognize beginnings and endings of lines and pages
- To go over the entire page without skipping any line and without interruption





- To perceive differences of the lines (lines are closer together or lengths vary)
- To recognize crossing points and to have the ability moving hands vertically, diagonally or horizontally.

Every lesson includes a criterion test, which defines the final goals and suggests a performance rate to the teacher. With the help of the performance rate the trainer can measure the success of the student.

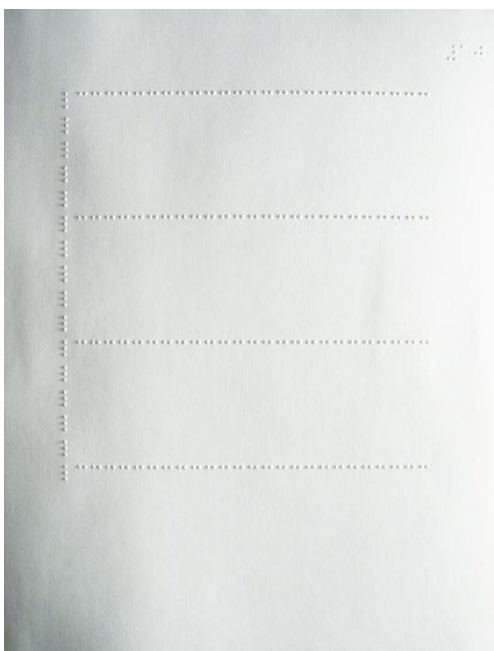
The program offers some explanations how to support students in moving their hands correctly. Some of this training hinds are:

- "Help the student track from left to right until the right end of the top line is found"

- "Now tail the student to take a short-cut to the next line. Help the Student track along

The diagonal line until the beginning of the next line is found. Let the student track the rest of the page, unassisted if possible. Repeat until the student can do it smoothly unassisted."

As a training assessment the Mangold Program is providing a pushpin board. The pushpin board is a board consisting of cork. It is as long as a Braille page and as wide as the width of one and half Braille pages. The pushpin board includes pins with which you can fix a page on the board or just put them into the board. It includes a rubberped, which avoids slipping. The pushpin board helps strengthening the muscles of the students and can be used as a landmark. You can put an exercise Braille page on the board fix its corners with the pins and put one pin at the beginning of every line. The pins will support the students at the beginning in their learning process in keeping track of the lines.



### **Examples of Braille materials and exercises for both-hand reading**

The pages 9 - 17 of the Mangold trainingprogramm are intend to train both hand reading. They are consisting of lines, which are containing always the same symbols in one line. But the symbols of the different lines of the same page are varying. The length of the lines is different.

Page 11 shows always lines, which are crossing each other at their starting or ending point.

Page 10 looks like an open square. The right side of the square is missing. The left side is a horizontal line going downwards. It gives the

students an understanding and feeling of moving hands/fingers horizontally. One exercise, which can be proposed to the students, is: Finding the boxes on the page and put a pin into the box. Boxes are symbols of six dots, - a full square.

### **Examples of Braille materials for one hand reading (page 17 to 23)**

The lines of the pages are divided into two parts so that students can move hands independently and will recognize different symbols on every side of the line. In some cases the halves of the lines are separated by a horizontal line or just by a big gap. Sometimes the symbols on each side of the line are the same sometimes they are different. But every line just contains two different symbols. But the page itself is often a mix of different Braille symbols.

#### **Example:**

One line of the page consist in its half of the full square symbol and on its second half of the three dot symbol (dots 1-2-3 equals letter l). Another line of the same page consist in its half of the symbol dots 1-2-3-4 equals letter g and on its second half of the symbol dots 3-4 equals letter c.

Symbols will be repeated on some pages so that the student will memorize them.

With regards to practicing both hands reading the student is required to do certain exercises like reading the left half of one line with both hands and the right half with just the right hand. This method should be continued during the entire page.

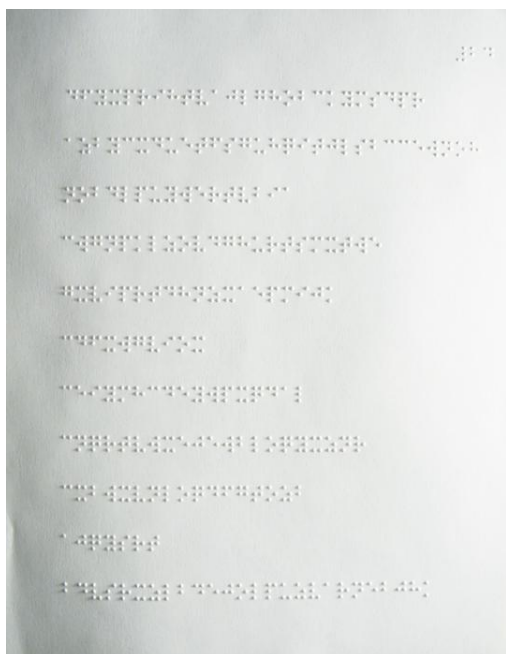
Another exercise is to go with both hands across the line until the middle line. The left hand will move back to the beginning of the line while the right hand will continue walking until the end of the second half of the line. Both hands now have to find the starting point of the second line.

Page 23 provides a base for a game called "ZIG-ZAG Game. This page consists of seven lines of every half of the page. Two of these seven lines are crossing each other at one point. The lines are running in a zigzag. Both halves of the page are divided through a thick vertical line.

Game instructions:

The student locates the end of the line nearest to the thick line in the middle of the page.

When the teacher says, "GO," the student tries to follow the zigzag line and reach the Opposite end of the line before the teacher says, "STOP." The page may be turned in several directions in order to vary the game and provide additional practice for the student.



## **Lesson 2**

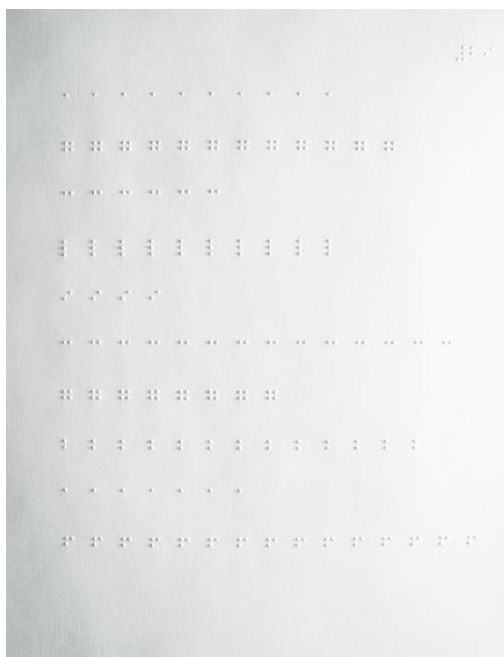
### **Tracking from left to right across unlike symbols that follow closely without a space**

This lesson includes pages 24 to 28. The lines of this pages consisting of different Braille symbols. Every line contains a Varsity of symbols and the length of lines is varying. Symbols are not repeated within one line. But they can be retrieved on other lines of the pages. Pages 27 and 28 are divided into two halves in order to practice one hand reading. The exercises are the same as mentioned in the first lesson.

### Lesson 3

#### Tracking from left to right across like symbols that have one or two spaces between them

Lesson three includes Braille pages 29-34. The lines of these pages consist of lines, which are always including just one symbol. But every line contains a different one.



Between the symbols are gaps of different sizes.

One page example:

Page 29 consists of ten lines. Line one contains ten times the Braille symbol dot one. The second line consists of the Braille symbol dots 1-2-3-4 which recurs ten times. Line three is a short line pointing out the Braille symbol dot 1-4 for six times. Line four shows the Braille symbol dot 1-2-3 for ten times. Line five states the Braille symbol dot 2-4 for four times. Line six shows again Braille symbol dot 1-4 but now for thirteen times. So the line is much longer as the third one. The length of the lines is varying.

On some pages you can find full squares between the symbols. Students can discover them and mark them with a pin from the pushpin board. Symbols will be constantly repeated over the different pages so that the students can

retrieve and recognize them. Exercises are remaining the same as in the first lessons. They are mainly including:

Fast hands movement, retrieving symbols, using hands while going over the lines independently, marking corners of pages with pins and marking beginnings and ends of lines with pins.

### Lesson 4

#### Tracking from left to right across unlike symbols that have one or two spaces between them.

This lesson includes pages 35-38. The layout of the Braille material is nearly the same of lesson number two. Different symbols appearing in one line but now with a space between each other. As in the lessons before a criterion test is set. It can be used for daily one-minute timings in order to evaluate the progress of the students. It says: " Minimal Performance Goal: Using both hands, track across twenty-four (24) lines in 60 sec. 90% accuracy is acceptable."

One exercise in this lesson is to count lines and just mark a few of them with pins. Example: "Mark the beginning of line two and the end of line five."



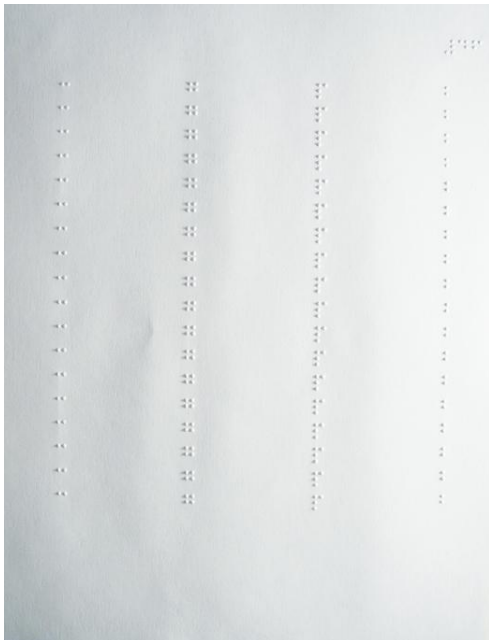
## Lesson 5

### Tracking from top to bottom over like symbols that follow closely

This lesson includes Braille pages 39-49. This teaching unit intends to train the students in moving hands horizontally over the Braille page by using the right hand position. Further they shall be able to recognize starting and ending points of the different lines and perceive the layout differences (length, wide etc.)

Braille page 40 consists of five horizontal running lines. Two lines are having one crossing point. The first line on the very left side of the page and the last line on the right side of the page are crossing on one point line number two and line number four. Line one cross with line number two on their ending points. Line five crosses with line number four at their starting point. The lines on the left and on the right side of the pages are called helper lines. They are forming the borders of the pages and support the students in keeping track. Braille pages 43-46 are showing horizontal lines, which are running parallel and every line consists of a single symbol.

The Braille pages 46-48 are divided by a vertical line into two parts that allows the students to train one hand reading on each side.



Exercises, which are listed in the book, are:

- Locating the starting and the endpoint of every line
- Increasing the pace by going over the different lines of the Braille pages
- Identifying the different columns and pass them by increasing the pace of the hands movement
- Putting pins on the beginning and end of every column.
- Identifying the shortest column and mark it with a pin

Braille page 49 contains a game called "Speedy fingers race".

The Braille page consists of four vertical lines, which are curved. The two lines appearing on the upper part of the page and two on the lower part. The parts are separated through a thick line.

#### Game description

Two players (both visually impaired or one visually impaired and one seeing student wearing a blindfold) sit across the table from one another. Both players locate the "thick" line. Next they both locate the beginning of the thin dotted line nearest the "thick" line. When the teacher say "GO," they race along the smooth line. The first person to get to the other end of the line wins the game.



## **Lesson 6**

### **Tracking from top to bottom over unlike symbols that follow closely without a space.**

This lesson includes Braille pages 50-55. It follows the same rules as lesson three. The only difference is that students are intending to read horizontally instead of vertically. Now they are also being trained to read quicker and to mark bottoms and tops of columns as quick as possible. The manual states that this procedure can be performed as a game so student's motivation level will be high. Additionally students can put more pins at the top or bottom so that they get an understanding of numbers as well. The book also suggests marking gaps.

## **Lesson 7**

### **Tracking from top to bottom over like symbols that have one blank space between them.**

The principles and the Braille material of this lesson are similar to the fourth lesson. The difference is that symbols are arranged horizontally. Every column shows a certain amount of a single symbol. In-between appear gaps. Braille pages 57 and 58 are showing horizontal lines, which are crossing each other. Two lines are always crossing at the top or at the bottom. Exercises are the same as in the other lessons. They are focusing on recognition, marking, quick reading and finding frequent appearing symbols.

## **Lesson 8**

### **Tracking from top to bottom over unlike symbols that have one blank space between them.**

The contents and the material are similar to those of lesson four. The Braille page is divided into three columns, which are showing different symbols in every column and every line. The student will move his hands horizontally again and will perform the same tasks as in the previous lessons.

## **Lesson 9**

### **Identifying two geometric shapes as being the same or different.**

This lesson includes Braille pages 67-71. The lesson is focussing on identifying geometric shapes of being equal or different. The task for the student is just to get an understanding of differences. In this lesson it is not important to know what types of geometric shapes the student is touching. The criterion test for this lesson, which can be performed on a daily base, says: "Identify the two symbols as being the same or different. Ask the student to look at each line. If the symbols are the same, say "same." If they are not the same, say "different."

Minimal Performance Goal does sixteen lines in 60 seconds. 90% accuracy is acceptable."

One suggested exercise for this lesson is:

- Marking the line with a pin if geometric shapes are the same.

On the Braille pages you can find the following geometric shapes:

Rectangles, squares, circles, triangles, ellipses,

The geometric shapes are available in different sizes and sometimes you can see the mirror-inverted image of them.

## **Lesson 10**

### **Identifying two Braille symbols as being the same or different.**

This lesson includes pages 72-76.

Four symbols are arranged in one line. They are arranged in two columns. Two of them are always appearing in one column. The students have to recognize if the two symbols which are appearing in one column are the same or different.

If the symbols are the same the student can mark them with a pin. On the first Braille pages of this lesson the same symbols appearing more frequently. On the next pages it is more difficult for students to identify them, because their frequency of appearance is decreasing.

## **Lesson 11**

### **Identifying two Braille symbols as being the same or different.**

This lesson includes pages 77-81. The task is the same as in the lesson before but the layout of the Braille pages has changed. The lines of the pages now consisting of a thick long line. Within the line is gap where you can see two Braillesymbols.

Sometimes these symbols are the same or the line shows two different symbols. The length of the lines is varying.

## **Lesson 12**

### **Identifying the one symbol that is different in a line of like symbols using l and c.**

This lesson includes Braille pages 82-87. The lines of the Braille pages of this lesson consisting either of lines with the Braille symbol dots 1-2-3 or dots 1-4. Within these lines you can find just one small 1-4- or 1-2-3 dotted symbol. The entire pages just consist of these two symbols. The task of the student is to find the one symbol within the line of same characters, which is different. The student has only to keep in mind these two symbols and figures out which appears only one time in the line.

## Lesson 13

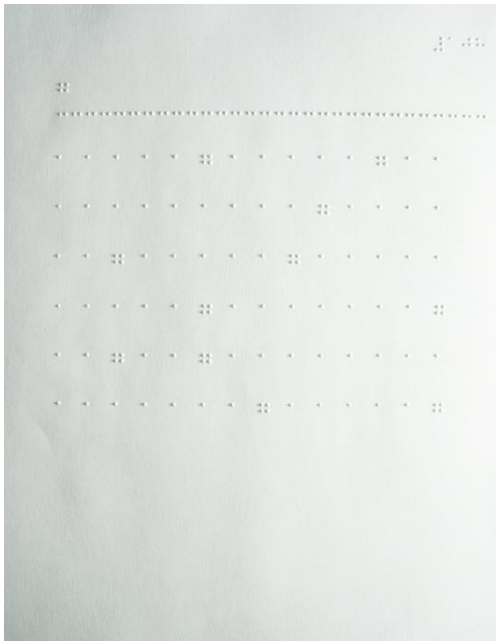
**Identifying the one symbol that is different in a line.**

**Of like symbols using similar Braille symbols.**

This lesson includes Braille pages 88-94. Every line is consisting of two different Braille symbols. One of these Braille symbols fills almost the entire line. Only once occurs a different Braille symbol in the line. Often lines with two different symbols will be repeated during the pages. The student has to find and mark the different symbol in the line. He can mark it with the pins of the pushpin board. This will give him awareness of the difference of this symbol and strengthen his muscles.

## Lesson 14

**Identifying the one symbol that is different in a group of three symbols.**



This lesson includes Braille pages 95-105. The Braille pages are showing different geometric shapes. Every line contains three geometric shapes. Two of them are the same and one of the three shapes is different. The task of the student is to figure out the different one and to mark it. Additionally students will learn which geometric shapes exist and how they look like. The geometric shapes that are available are: Rectangles, circles, towers, triangles, ellipses, parallelograms and circles that are constructed out of dots and lines. The construction and the dot-patterns of the shapes are varying. On page 100-103 are appearing three Braille symbols in one line. Two of them appearing frequently and one of them only once. After page 103 more than three Braille symbols are appearing in one

line. But one of them is always appearing once and this symbol has to be recognized by the students.

## Lesson 15

**Teaching letter names g, c, and l**

In this lesson the teaching of the Braille Alphabet is starting. This lesson includes Braille pages 106-111.

Page 106 includes the letters G, C and L. They are all appearing in every line of this page.

Example: Line three shows the letters G, C, L, C, G, L, G, C, L, L, I, G, C.

Braille page 107 shows lines, which are consisting out of the letter C and just one time each line appears letter L.

Page 108 consists only out of the letter G. It is written on the top of the page, placed at the left side as a Single letter. This position is called helper letter. Below you can find the letter G in every line just one time per line. It is written in-between a dotted strain.

Page 109 contains again letters G, C and L. They are written in-between a strain which consist out of the dots 1-4. Within these strains, which are filling, every lines of the page are gabs which including the letters. In each gab appears one letter.

Page 110 includes again all letters. On the top of the page is the helper letter C written. Every line consist out of three letters in-between are big gabs. Students have to find the letter, which is marked as a helper letter, and mark it. Page 111 contains squares. In every square appears just one letter. But it is appearing twice on the left corner and on the right corner of the square. Every line of the page consists out of one letter, which is written in three squares on every line. It is possible to cut out every square and use it as a flashcard or a card for a game. It is also recommended to use the letters from the Braille alphabet (pages 7-9) as flashcards in order to practice the letters.

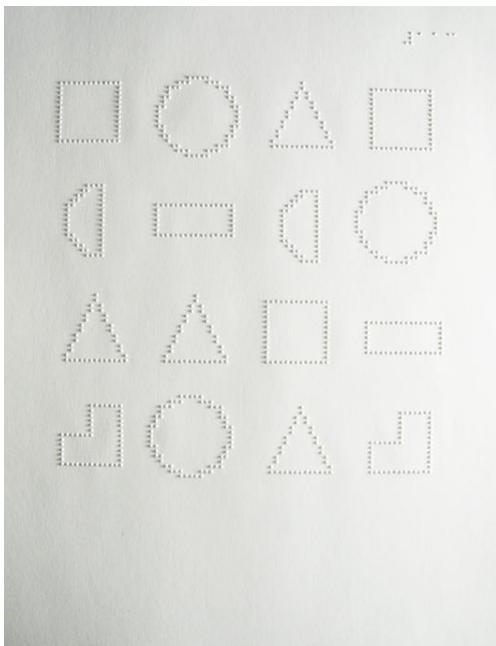
Exercises for this lesson are:

- Reading aloud all the letters which are written on the pages
- Marking certain letters with pins
- Mark the letter that appears as a helper letter, either in every column or in every line.
- Game: Creating cards with the letters, who will recognize the most letters who are displayed on the cards, will be the winner.

## Lesson 16

**Review the letters g, c, and l. introduce the letters d and y.**

This lesson includes Braille pages 112-121. This lesson includes the Braillesymbols G, C, L, D and Y as well as different geometric shapes. The first page of this lesson can be used as a criterion test. It implies all the above-mentioned letters. Students are required to read aloud the names of all letters by a rate of fifty letters per minute.



Pages 113-114 containing different geometric shapes like rectangles, squares, circles etc. Four geometric shapes are appearing in one line. The students are requested to identify the geometric shape in one line, which is the same as the first shape in this line. If the first shape in one line is a square they have to find the second square in the same line.

Braille page 115 provides the same exercise but now with the letters L, C, G, D and Y instead of geometric symbols. Page 116 indicates the helper letter D. The students are asked to mark all the D-letters on this page. Every line of this page consists only of two letters. In-between these letters are big gabs. Every line is including one D the other letters in the same line are

either C or L letters. Braille Page includes the same exercise just the frequency of letters is increasing up to four letters per line. Braille page 118 puts the focus on letter Y. The student has to find the letter Y and mark it. On this page lines are consisting out of three letters. Letters are: G, C, D, L and Y. But now not every line includes the letter Y, so the difficulty level is increasing. Page 119 contains all so far taught letters. They are written in-between a dotted strain. The exercise is to read aloud all the written letters. Braille page 120 contains squares with the letters D, G, L, C and Y. The amount of squares per line is varying. Sometimes squares are shifted from line to line. The helper letter of this page is letter D. The student has to mark all D's on this page.

Braille page 121 provides the material for a game called "Racing game". This Braille page consists of four lines with five columns. Every column contains a square with a letter. Line two and three are separated by a thick line.

Game instructions: Two players are sitting on a table in front of each other. Both players locate the thick line and put a magnet in the square upwards which contains the letter C. Afterwards both of them have to read all the letters within the squares from left to right. The magnet has to be left in the square with the letter the student has read out correctly. If someone makes a mistake the magnet goes back to the beginning. Who read out all the letters? The first player who moves the magnet across all squares wins the game.

## Lesson 17

### Review the letters g, c, l, d and Y Introduce the letters a and b

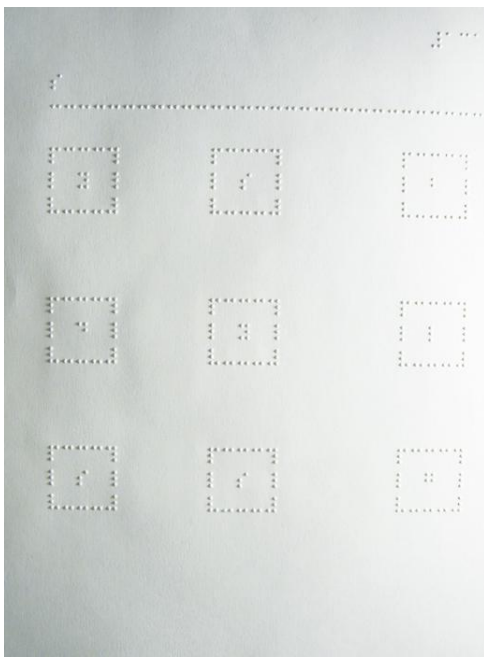
This lesson includes Braille pages 121-129. The lesson is mainly constructed as the lessons before. You can find Braille pages with helper letters on their top, which the student is requested to locate on the following lines of this Braille page. The amount of helper letters per page is increasing up to four helper letters per page.

Braille pages 128-129 are patterns for playing cards, which can be cut out and used for the following "Fish game".

"Deal four cards to each player. Each player checks his four cards and one player asks the other player for one card to make up a pair. If the other player does not have the card requested, the player says, "FISH." Then the player who asked for the card takes one card off the top of the deck. If that player now has two cards that make a pair,

They are placed on the table in front of the player. That player then has another turn.

If that player does not make a pair, it is the next player's turn. When all the cards are Gone, the player with the most pairs wins the game."



## Lesson 18

### Review the letters g, c, l, d, y, a, and b. Introduce the letter s.

This lesson includes Braille pages 130-136. The first page of this lesson shows the criterion test. The test includes all the letters which were

taught until yet. Students are requested to read 60 letters per minute with an accuracy of ninety percent.

Braille page 131 consists out of nine lines with three squares per line. Every square implies one letter. The students are requested to find the letter S and mark it with their favourite colour.

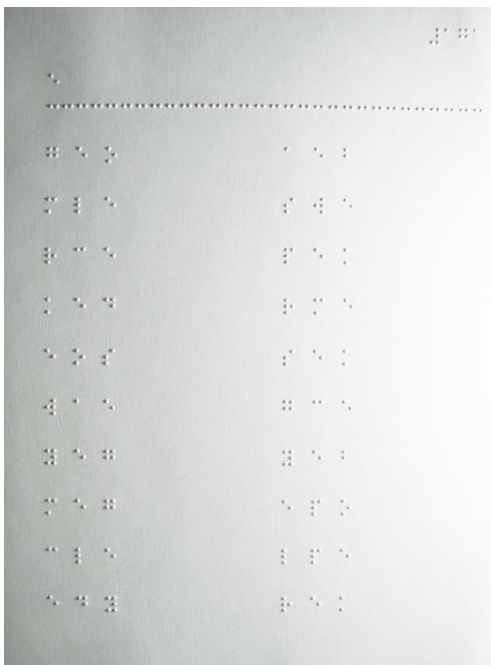
Braille page 132 shows dots on every line within the dots you can find the letter S one time per line. The students are requested to mark the letters with a pin. Braille page 134 consists of 4 letters per line. The students are requested to find the lines were two S-letters are appearing. The S-Letters are appearing as helper letters on the top of the page.

Braille pages 135-136 contains the material for a game called "THE WIGGLE WORM GAME"

These pages give a tactile image of a wiggle worm. The picture has some small holes, which are filled with a single letter. The manual gives the following instructions for the wiggle worm game:

"Place the page on the table so that the three holes are nearest to the player. Each player begins the game with a magnet in the space to the right of the worm's head. the player continues moving the magnet until the tail of the worm is reached. The first player to reach the tail wins the game.

The number of spaces that each player may move is indicated by the roll of the die. If the player can read the name of the letter on that space; the magnet may stay in that space. If the name of the letter is not read correctly, the magnet must be moved back to the beginning space."



## Lesson 19

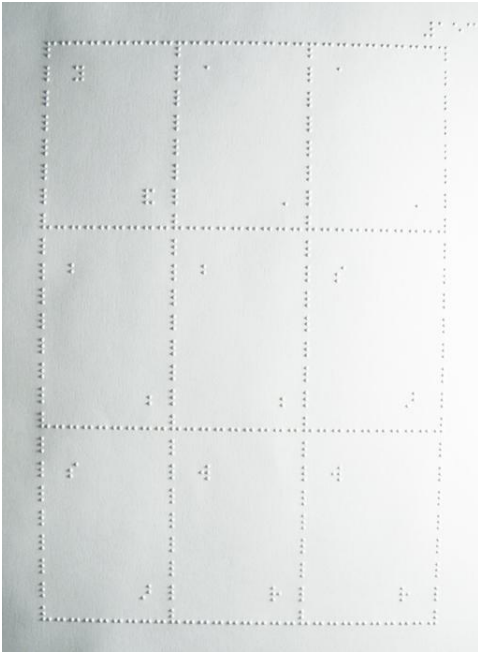
**Review the letters g, c, l, d, y, a, b, and s.  
Introduce the letter w.**

This lesson includes Braille pages 137-143. Braille page 138 consists of lines with dotted strains. Within the strains two or three letters per line are appearing. The students are requested to read aloud the letters. If any mistake occurs the teacher has to correct and ask the students to go back to the beginning of the page and start again. This should be repeated until the student will read the page correctly with less than two errors.

Braille page 141 provides three ellipses. Within these ellipses are big gaps. The students are requested to colour the inside of every shape

with their favourite colour. Additionally they should colour the dotted inside of the ellipses with a different colour. And paint the outside with another colour. This exercise helps develop fine muscle control. The accuracy of colouring within a given area is not the focus of this lesson.





## Lesson 20

**Review the letters g, c, l, d, y, a, b, s, and w.**

**Introduce the letters p and o.**

This lesson includes Braille pages 144-154. The lessons include all the material and training elements, which have been used during the past lessons. It is using Braille pages with helper letters which should be located and marked, Braille pages with dotted lines with letters in-between, a square which has to be painted and cards for a game called "Fish bowl game".

Instructions for the "Fish bowl game":

"Place all the cards in a large bowl on the table. One player counts to three, while the Other player fishes in the bowl for a card that he/she can read. If the player finds a Card that he/she can read, it is placed on the table in front of the player. When all the cards are out of the bowl, the player with the largest number of cards wins the game.

## Lesson 21

**Review the letters g, c, l, d, y, a, b, s, w, p, and o.**

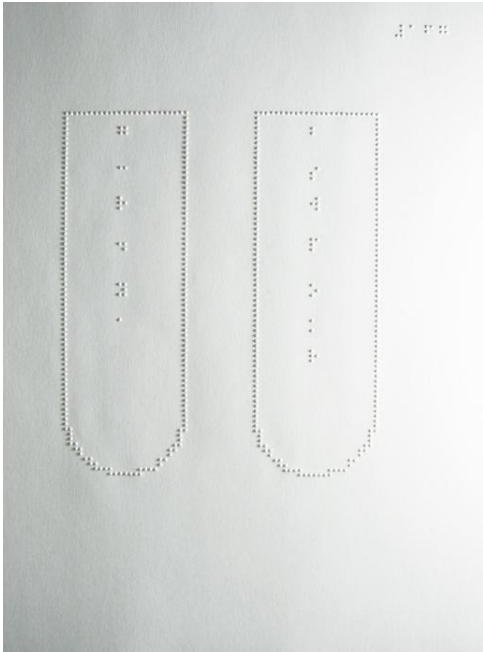
**Introduce the letter k.**

This lesson includes Braille page 155-159. The criterion test, which is provided on the beginning of every lesson, has now increased the amount of letters which should be read aloud within one minute. The amount increases from sixty to seventy letters per minute with an accuracy of ninety percent. Braille page 59 of this lesson provides Braille material and instruction for the "Egg Carton Game".

Game instructions:

"The letters in the top two lines should be cut out and attached to the bottom of each cup in an egg carton. Use double sided transparent tape for attaching the letters. The bottom two lines of letters may be used to prepare a second egg carton. Tape or Staple the two egg cartons end to end, with all the letters pointing in the same direction.

Both players sit on the same side of the table. One player moves his Marker across the top row, and the other player moves her marker across the bottom row. Ping-Pong balls may be used for markers. The roll of the die indicates how far each player may move. The player must read correctly the letter in the cup in which the marker lands. If the player does not read it correctly, the marker must be moved back Three spaces or to the first cup, if there are not three spaces. The first player to reach. The opposite end of the two cartons wins the game."



## Lesson 22

**Review the letters g, c, l, d, y, a, b, s, w, p, o, and introduce the letter r.**

This lesson includes Braille pages 160-167. This lesson provides the same training materials as in previous lessons. Additionally it provides on Braille pages 166 a tactile image of a face.

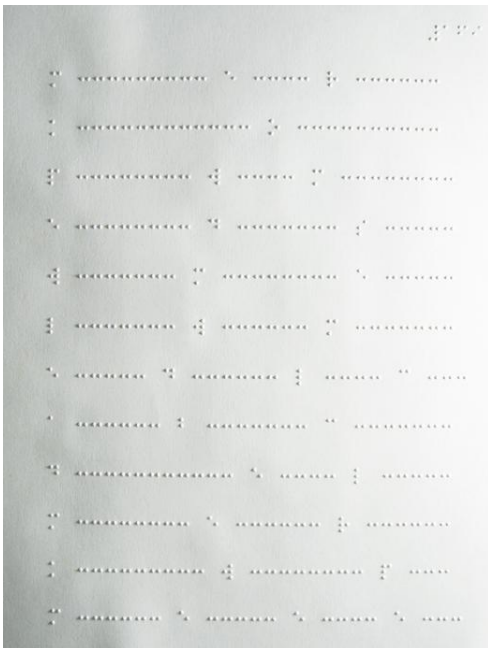
Braille page 167 has two images of tongues on it. Within the tongues are letters written. The students are requested to decorate the face with materials for hair, eyes and mnose. Further they shall put a slid in the line, which indicates the mouth of the face. Afterwards the tongues on the

next page will be cut out and they will be put through the backside through the face. It should look like the letters, which are written within the tongues, are coming out of the mouth of the tactile face.

## Lesson 23

**Review the letters g, c, l, d, y, a, b, s, w, p, o, k, and r.**

**Introduce the letters m and e.**



This lesson includes Braille pages 168-177.

The used Braille materials and the proposed exercises are the same as in the previous lessons.

- Marking the new letters in the squares
- Reading aloud all the letters (One error per page is allowed)
- Marking beginnings and endings of lines which are indicating the helper letter
- Marking lines which have three letters, if the M stands in the middle of these letters
- Playing cards. Who has the most pairs of letters (one pair contains two same letters) wins the game.

## **Lesson 24**

**Review the letters g, c, l, d, y, a, b, s, w, p, o, k, r, m, and e.**

**Introduce the letter h.**

This lesson includes Braille pages 178-183. It is mainly focusing on identifying and marking the letter H. either identifying him between other characters, between dotted strains or in connection with dotted strains.

## **Lesson 25**

**Review the letters g, c, l, d, y, a, b, s, w, p, o, k, r, m, e,**

**And h. Introduce the letters n and x.**

This lesson includes Braille pages 184-191. Materials and exercises are the same as in the previous lessons.

It provides a new game called „Quick answer game“.

Game instructions:

" Each of the two players places a game sheet on the magnet board. The first player locates the upper left square, which contains an x. The die is rolled. The player counts the number of Squares indicated by the die. The player must locate the correct square.

And say aloud the correct letter in that square before the other players count to five. If the player says it correctly, the magnet may be moved to that square. If the player Does not say it correctly, the magnet must be moved back to square one. The first person to move the magnet across all three lines of Squares and land on the bottom right square, which contains a p, wins the game."

## **Lesson 26**

**Review letters g, c, l, d, y, a, b, s, w, p, o, k, r, m, e, h, n,**

**and x. Introduce the letters z and f .**

This lesson includes Braille pages 192-199

The structure and exercises are almost the same as in previous lessons. Here one example for an exercise:

On Braille page 195 students have to find all Z letters, which are in the middle of a line. Every line of this page consists of six letters. After the third letter appears a big gap. Letter Z shows up in every line just the location is varying.

## **Lessons 27 and 28**

**Review the letters g, c, l, d, y, a, b, s, w, p, o, k, r, m, e,**

**H, n, x, z, and f and introduce letters U, T, I and Q**

These lessons are including Braille pages 200-217. Construction of the training lessons is the same.

Examples for Braille material and exercises Braille page 205:

The page implies ten lines with two columns. In every column three letters are written. The columns are divided by a thick line. The task of the student is to find the letter T and mark them with a pin. Braille page 208

Exercise: The student has to find all lines, which are containing just one Q besides other letters.

Braille material description: The page consists out of ten lines with three letters in each line.

## **Braille page 209**

**Exercise: Finding lines which have a Q in the beginning, middle and end**

Material description: The page consists out of ten lines. Every line includes three letters. In-between every letter is a dotted line (Equals Braille letter C). The task is to find a line, which is consisting only out of the letter Q.

## **Lesson 29**

**Review letters g, c, l, d, y, a, b, s, w, p, o, k, r, m, e, h, n,**

**X, z, f, u, t, q, and i. Introduce the letters v and j.**

This lesson includes Braille pages 218-227. It is the last lesson of the Mangold Program. Exercises are the same as in previous lessons. Students have to identify and mark the new introduced letters. Sometimes these letters are located together with other letters in one line. Or they are put in-between a strain, which consists out of one Braille symbol. Page 223 gives the exercise: to look for the first letter in every line and to find a second one of the same letter in the same line. The last page of the

Braille material contains two tactile images of tongues in which letters are appearing. These tongues should be used for the face, which was prepared in lesson 22.

In the end of the training manual follows a very brief abstract. The main statement of the abstract is that the use of the Mangold training program has significantly reduced errors in tactile recognition and Braille reading. Additionally students who took part in this training were very successful in coordinated hand movement and didn't show backtracking behaviours.